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tions, which were given me on reliable authority. As the second king of Siam told me, there are some stone ruins at Phimai, near Raxasema, the capital of the province Korat, built on the model of the temple of Nakhon Vat, but in smaller dimensions. The king had not visited Nakhon Vat himself, as there prevails a mysterious fear throughout Siam and Cambodia to approach this hallowed spot, but several of his people who accompanied him to Phimai had been at Nakhon Vat, and were struck by the resemblance. A French missionary who had passed several years amongst the savage tribe of the Sthieng, described to me extensive stone ruins which exist on the island of Kosatin, on the Mekhong, three days upwards from Panompen. They consist of four large towers, ornamented with sculptures, and have an ancient kind of letters inscribed on them (very likely the Akson Mihng, as in the other places). At Udong I saw in the principal Vat two inscribed stones, which had been brought from some ruins halfway on the road to Kampot.

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VII.—*On the Origin and Migrations of the Greenland Esquimaux.*

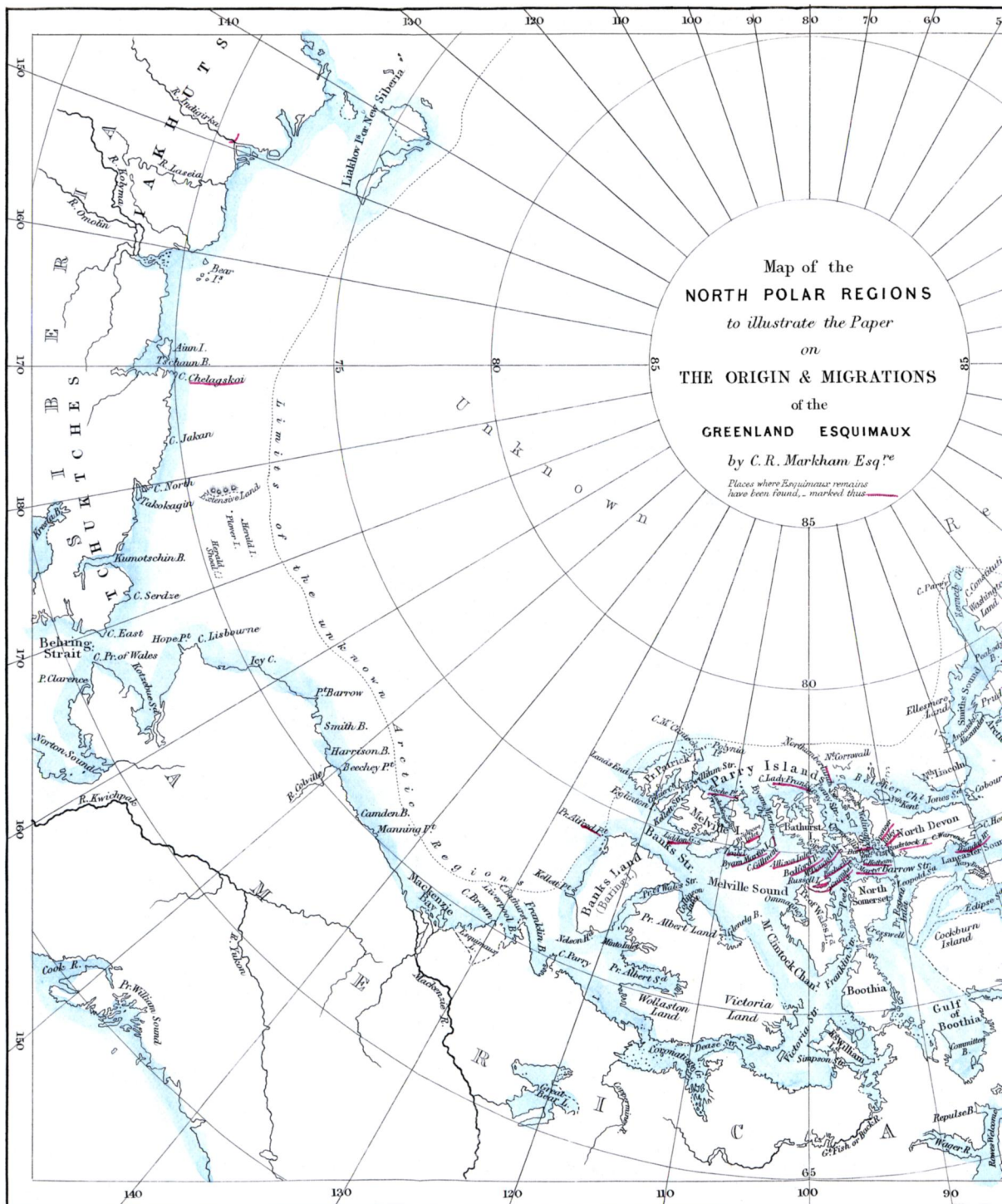
By CLEMENTS R. MARKHAM, Esq., Secretary R.G.S.

*Read, February 27, 1865.*

THE attention of the Geographical Society has now been drawn, by Captain Sherard Osborn, to the great question of North Polar Exploration.\* Our gallant associate has pointed out the route that should be taken by an expedition to explore the region round the Pole, the means that should be adopted for securing its success, and the vast importance of the scientific results likely to be derived from such an expedition. The proposal has touched a chord which vibrates through the hearts of the countrymen of Drake and Raleigh with answering sympathy. In this and other kindred scientific Societies it will meet with warm support as a matter of course, and even from Scandinavia and Germany have come kindly words of encouragement. As one of Captain Osborn's numerous correspondents assures him, "there are numbers of whom you will never hear who heartily wish you success." The time is yet far distant when England's sons shall have become indifferent to geographical discovery; and the widest field for such discovery—the field, too, which has afforded some of the most glorious opportunities of distinction for our naval worthies—lies within the Arctic circle. In this region—in spite of the fruitful labours of the explorers who

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\* See 'Proceedings' R. G. S., vol. ix. p. 42 *et seq.*, for report of Captain Sherard Osborn's paper, and the discussion which followed its reading.





have from time to time, for three centuries, navigated its seas and examined its coasts—there is still an enormous extent of land and sea entirely unknown to Europeans. It is scarcely necessary to add that these unknown regions lie chiefly within  $80^{\circ}$  of north latitude, and between the westernmost of the Parry Islands and Siberia.

An expedition to the North Pole will advance every branch of science, and will enrich the store of human knowledge generally. Its geographical discoveries will only be one out of the many valuable results that will be derived from it; but, as geographers, we may well look forward with deep interest to the rich harvest that will be reaped by our science, and take a preliminary survey of the additional knowledge that may be in store for us. It should be remembered that, though only one-half of the Arctic regions has been explored, yet that throughout its most desert wastes there are found abundant traces of former inhabitants where now all is a silent solitude. Those cheerless wilds have not been inhabited for centuries, yet they are covered with traces of the wanderers or sojourners of a by-gone age; and, as I shall endeavour to show, the unexplored regions far to the north, even up to the very Pole itself, may not improbably be at this moment supporting a small and scattered population. The wanderings of these mysterious people, the scanty notices of their origin and migrations that are scattered through history, and the requirements of their existence, are all so many clues which, when carefully gathered together, will assuredly tend to throw some light on a most interesting subject. The migrations of man within the Arctic zone give rise to questions which are closely connected with the geography of the undiscovered portions of the Arctic regions—questions which can only be solved by a scientific Polar expedition, but which may very properly, in the meanwhile, be discussed by geographers and ethnologists. The origin and history of the Esquimaux of Greenland, and especially of those interesting people on the northern shores of Baffin's Bay, who were named by Sir John Ross the "Arctic Highlanders," are topics serving to illustrate one of the numerous points which will engage the attention of the proposed expedition, and, at the same time, they may throw some passing light on questions in Arctic physical geography which still remain unsolved.

Until within the last nine centuries the great continent of Greenland was, so far as our knowledge extends, untenanted by a single human being—the bears, reindeer, and musk-oxen held undisputed possession. There was a still more remote period when fine forests of exogenous trees clothed the hill-sides of Disco, when groves waved, in a milder climate, over Banks's Land and Melville Island, and when corals and sponges flourished in the now frozen waters of Barrow's Straits. Of this period we know nothing; but it is at

least certain that when Eric the Red planted his little colony of hardy Norsemen at the mouth of one of the Greenland fiords, in the end of the tenth century, he found the land apparently far more habitable than it is to-day.

For three centuries and a half the Norman colonies of Greenland continued to flourish; upwards of 300 small farms and villages were built along the shores of the fiords from the island of Disco to Cape Farewell\* (for the persevering Danish explorer Graah has satisfactorily shown that the East and West Bygds were both on the west coast),† and Greenland became the see of a Bishop. The ancient Icelandic and Danish accounts of these transactions are corroborated by the interesting remains which may be seen in the Scandinavian museum at Copenhagen. During the whole of this period no indigenous race was seen in that land, and no one appeared to dispute the possession of Greenland with the Norman colony.‡ A curious account of a voyage is extant, during which the Normans reached a latitude north of Barrow's Strait; yet there is no mention of any signs of a strange race. The Normans continued to be the sole tenants of Greenland, at least until the middle of the fourteenth century.

But Thorwald, the boastful Viking, who sailed away west from Greenland and discovered America,§ did meet with a strange race on the shores of Finland and Markland, which probably correspond with modern Labrador. Here he found men of short stature, whom he contemptuously called *Skrøllings* (chips or parings), and some of whom he wantonly killed. Here, then, is the first mention of the Esquimaux. At this period (the eleventh century) they had probably spread themselves from Northern Siberia, the cradle of their race, across Behring's Straits, along the whole coast of Arctic America, until they were stopped by the waves of the Atlantic. The hostility of the Red Indians was an effectual barrier to their seeking a more genial home to the south. They were not likely to wander towards the barren and inhospitable north, any more than their descendants do to-day; and they had no inducement to trust themselves in their frail *kayaks*, or *omiaks*, on the waves of the Atlantic. They assuredly never crossed over to Greenland by navigating Davis Strait or Baffin's Bay. This, as I believe, is the southern belt of Esquimaux migration; but it is with the Greenland Esquimaux that we have now to do, who had had no communication with their southern brethren since their ancestors hunted together on the frozen tundra of Siberia, and who, after centuries of wanderings along wild Arctic shores and in regions still unknown, first make their appearance in Greenland, coming down from the north.

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\* Egede.

† Graah's 'Greenland,' Introd. and p. 163.

‡ Crantz, i. p. 257.

§ Ibid.

Our last historical glimpse of the Norsemen of Greenland shows them living in two districts, in villages along the shores, with small herds of cattle finding pasturage round their houses, with outlying colonies on the opposite shores of America, and occasional vessels trading with Iceland and Norway; but no grain would ripen in their fields. They seem to have been a wild turbulent race of hardy pirates, and their history, short as it is, is filled with accounts of bloody feuds. All at once, in the middle of the fourteenth century, a horde of Skrøellings, resembling the small men of Finland and Markland, appeared on the extreme northern frontier of the Norman settlements of Greenland, at a place called Kindil's Inlet.\* Eighteen Norsemen were killed in an encounter with them; the news of the invasion travelled south to the East Bygd; one Ivar Beer came to the rescue in 1349, and he found that all the Norsemen of the West Bygd had disappeared, and that the Skrøellings were in possession. Here the record abruptly ceases, and we hear nothing more of Greenland until the time of the Elizabethan navigators, and nothing authentic of either Norsemen or Skrøellings until the mission of Hans Egede, in the middle of the last century.

When the curtain rises again all traces of the Norsemen have disappeared, save a few Runic inscriptions, extending as far north as the present settlement of Upernavik, some ruins, and the broken church-bells of Gardar. The Skrøellings, or Esquimaux, are in sole possession from Disco to Cape Farewell. And the ancient Norse records are fully corroborated by the traditions of the Esquimaux, in the statement that they originally came from the north. Like all the Mongolian races, the Esquimaux are careful genealogists; Krantz tells us that they could trace back for ten generations;† and the story handed down from their forefathers is that they reached Southern Greenland by journeys from the head of Baffin's Bay.

The interesting question now arises—whence came these Greenland Esquimaux, these *Innuits*, or men, as they call themselves, and as I think they ought to be called by us? They are not descendants of the Skrøellings of the opposite American coast, as has already been seen. It is clear that they cannot have come from the eastward, over the ocean which intervenes between Lapland and Greenland, for no Esquimaux traces have ever been found on Spitzbergen, Iceland, or Jan Mayen. We look at them and see at once that they have no kinship with the red race of America; but a glance suffices to convince us of their relationship with the northern tribes of Siberia. It is in Asia, then, that we must seek their origin, that cradle of so many races, and the search for some clue to their origin is not altogether without result.

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\* Crantz, i. p. 258.

† Ibid., p. 229.

During the centuries preceding the first reported appearance of Skrœllings in Greenland, and for some time previously, there was a great movement among the people of Central Asia. Togrul Beg, Zengis Khan, and other chiefs of less celebrity, led vast armies to the conquest of the whole earth, as they proudly boasted. The land of the Turk and the Mongol sent forth a mighty series of inundations which flooded the rest of Asia during several centuries, and the effects of which were felt from the plains of Silesia to the shores of the Yellow Sea, and from the valley of the Ganges to the frozen tundra of Siberia. The pressure caused by these invading waves on the tribes of Northern Siberia drove them still farther to the north. Year after year the intruding Tartars continued to press on. Sheibani Khan, a grandson of the mighty Zengis, led fifteen thousand families into these northern wilds, and their descendants, the Iakhuts, pressed on still farther north, until they are now found at the mouths of rivers falling into the Polar Ocean. But these regions were formerly inhabited by numerous tribes which were driven away still farther north, over the frozen sea. Wrangell has preserved traditions of their disappearance, and in them, I think, we may find a clue to the origin of the Greenland Esquimaux.

The Iakhuts, it is said, were not the first inhabitants of the country along the banks of the river Kolyma.\* The Omoki, a tribe of fishermen, the Chelaki, a nomadic race possessing reindeer, the Tunguses, and the Iukahirs were their predecessors. These tribes have so wholly disappeared that even their names are hardly remembered. An obscure tradition tells how "there were once more hearths of the Omoki on the shores of the Kolyma than there are stars in an Arctic sky."† The Onkilon, too, once a numerous race of fishers on the shores of the gulf of Anadyr, are now gone no man knows whither. Some centuries ago they are said to have occupied all the coast from Cape Chelagskoi to Behring's Straits, and the remains of their huts of stone, earth, and bones of whales are still seen along the shores.‡ The Omoki are said to have departed from the banks of the Kolyma in two large divisions, with their reindeer, and to have gone northward over the Polar Sea.§ Numerous traces of their *yourts* are to be seen near the mouth of the Indigirka. The Onkilon, too, fled away north, to the land whose mountains are said to be visible from Cape Jakan.

Here we probably have the commencement of the exodus of the Greenland Esquimaux. It did not take place at one time, but spread over a period of one or two centuries. The age of Mongol invasion and conquest was doubtless the age of tribulation and

\* Wrangell, p. 171.

† Ibid., p. 53.

‡ Ibid., p. 358.

§ Ibid., p. 181.

flight for the tribes of Northern Siberia. The Khivan genealogist Abulghazi tells us that when Ogus Khan, a chief belonging to the conquering family of Zengis, made an inroad into the south, some of his tribes could not follow him on account of the deep snow.\* They were called in reproach *Karlik*, and this very word, in its plural form of *Keralit*, is the name which the Esquimaux of Greenland give themselves; but I do not attach any weight to this coincidence.

The ruined *yourts* on Cape Chelagskoi mark the commencement of a long march; the same ruined *yourts* again appear on the shores of the Parry group—a wide space of 1140 miles intervenes, which is as yet entirely unknown. If my theory be correct, it should be occupied either by a continent or by a chain of islands; for I do not believe that the wanderers attempted any navigation, or indeed that they possessed canoes at all. They kept moving on in search of better hunting and fishing grounds along unknown shores, and across frozen straits, and the march from the capes of Siberia to Melville Island doubtless occupied more than one generation of wanderers.

There is some evidence, both historical and geographical, that the unknown tract in question is occupied by land. A chief of the Tchuktche nation told Wrangell that from the cliffs between Cape Chelagskoi and Cape North, on a clear summer-day, snow-covered mountains might be descried at a great distance to the north.† He maintained that this distant northern land was inhabited, and added that herds of reindeer had been seen to come across the frozen sea, and return again to the north. The Tchuktsches also spoke of a much more northern land, the lofty mountains of which were visible on very clear days from Cape Jakan.‡ Wrangell himself never saw this mysterious land, and the Tchuktsches were hardly believed until it was actually re-discovered by Captain Kellett, in the *Herald*, in 1850. In August of that year he sighted an extensive and high land to the north and north-west of Behring's Straits, with very lofty peaks, which he believes to be a continuation of the range of mountains seen by the natives off Cape Jakan.§ There are geographical reasons, which have been pointed out by Captain Osborn, for the supposition that land, either as a continent or as a chain of islands, extends to the neighbourhood of the westernmost of the Parry group. The nature of the ice-floes between the north coast of America, off the mouths of the Colville and Mackenzie, and Banks Island, leads to the conclusion that the sea in which such ice is formed must be, with the exception of some narrow straits, land-locked. The Esquimaux of this part of

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\* Strahlenberg.

† Wrangell, p. 326.

‡ Ibid., p. 342.

§ Osborn's 'North-West Passage,' p. 49.

the coast of North America are never able to advance more than 30 miles to seaward.\* The ice is aground in 7 fathoms water, and the floes, even at the outer edge, which is of course lighter than the rest, are 35 to 40 feet thick. The nature of the ice is the same along the west coast of Baring Island. When the *Investigator* made her perilous voyage along this coast, the channel between the ice and the cliffs was so narrow that her quarter-boats had to be topped up to prevent their touching the lofty ice on one side and the cliffs on the other. The pack drew 40 to 50 feet of water; it rose in rolling hills upon the surface, some of which were 100 feet high from base to summit, and when it was forced against the cliffs it rose at once to a level with the *Investigator's* fore yard-arm.† M'Clintock also mentions the very heavy polar ice which is pressed up on the north-western shore of Prince Patrick's Island.‡

Such awful ice as this was never seen before in the Arctic regions. The only way of accounting for its formation, which must have taken a long course of years, is that it has no sufficient outlet, and that it goes on accumulating from year to year. It must therefore be in a virtually land-locked sea, and this of course implies land to the north, as well as to the east, south, and west.§ Here, then, is my bridge by which the Omoki, Tunguses, and Onkilon passed over from the frozen tundra of Siberia to the no less inhospitable shores of Prince Patrick's Island, and to those at the head of Wellington Channel and Baffin's Bay. The theory of Esquimaux migration is thus illustrated by facts in physical geography.

On Melville and Banks islands, and near Northumberland sound, we meet with the same ruined *yourts* of stone and earth, the same stone fox-traps, and the same bones of whales and other animals as were seen by Wrangell at the mouth of the Indigirka. These traces were met with by the Arctic expeditions all along the shores of the Parry group, from Prince Patrick's Island to Lancaster Sound, a distance of 540 miles. They were of great antiquity, and had evidently not been occupied for centuries. M'Clintock found the ruts made by Parry's cart, and was led by their appearance, after more than forty years, to assign a very high antiquity to the Esquimaux remains. He says: "No lichens have grown upon the upturned stones, and even their deep beds in the soil where they had rested ere Parry's men removed them are

‡ \* Osborn's 'North-West Passage,' p. 70.

† Ibid., p. 204.

‡ 'Blue Book,' p. 569. (Further papers, 1855.)

§ Dr. Simpson tells us that the natives of Pt. Barrow have a tradition that there is land far away to the northward, and that some of their people once reached it. It was a hilly country, inhabited by men like themselves, and called *Ighun-nuna*. — ('Blue Book,' p. 917.)

generally distinct. The astonishing freshness of these traces compel us to assign a very considerable antiquity to the Esquimaux remains which we find scattered along the shores of the Parry group, since they are always moss-covered, and often indistinct.”\* I myself carefully examined several of these traces of the wanderers, and was equally impressed with their great age. I have here collected a list of the principal remains that have been observed along this weary line of march :—†

1. The remains of huts were found by M'Clure on the north-west coast of BARING ISLAND.

2. On MELVILLE ISLAND Parry found the ruins of six huts, 6 feet in diameter, by 2 feet high, on the south shore of Liddon's gulf. Similar remains were found on Dealy Island, and at the entrance of Bridport inlet.‡ Near point Roche, a piece of drift timber was seen by Vesey Hamilton, standing upright on the summit of a low, flat-topped hill, about 300 yards from the sea, and 60 feet above its level, but no signs of an Esquimaux encampment were found near it. The ground was covered with snow. The drift timber was 6 inches in diameter, and was sticking up about 4 feet out of the ground, being conspicuously placed, as if for a mark.§

3. BYAM MARTIN ISLAND.—Near Cape Gillman there were bones of an ox, and jaws of a bear, and on the east shore General Sabine saw six ruined huts and an antler.||

4. BATHURST ISLAND.—To the eastward of Allison inlet there were seven huts, some circles of moss-covered stones, and, a few miles to the west, another hut. On the west side of Bedford Bay there were six huts, and some circles of stones, of great age. On Cape Capel M'Clintock examined ten winter habitations, and the bones of bears and seals, some of them cut with a sharp instrument. From various circumstances he was led to believe that none of these huts have been inhabited within the last 200 years. The general form of the huts is oval, with an extended opening at one end. They are 7 feet long by 10, and are roofed over with stones and earth, supported by bones of whales.¶

5. CORNWALLIS ISLAND.—At the western entrance of M'Dougall Bay there are some very ancient Esquimaux encampments.\*\* On an islet in Becher Bay I found three moss-covered circles of stones, the sites of summer tents, and a portion of the runner of a sledge. West of Cape Martyr there are numerous sites of summer tents, with heaps of bones of birds, and some very perfect stone fox-traps. On the eastern side of Cape Martyr Osborn carefully

\* 'Blue Book,' p. 582. (Further papers, 1855.)

† Markham's 'Franklin's Footsteps,' p. 115.

‡ 'Blue Book,' p. 625. (Further papers, 1855.)

§ 'Blue Book,' p. 188. (Additional papers, 1852.)

‡ Parry's first voyage.

|| Parry's first voyage.

\*\* Ibid., p. 278.

examined a winter hut. Its circumference was 20 feet, and the height of the remaining wall 5 feet 6 inches.\* The walls were overgrown with moss, and much skill was displayed in the arrangement of the slabs of slaty limestone. Farther to the eastward I found traces of an extensive winter settlement, a neat grave of limestone, and many heaps of bones. The whole coast is strewn with remains from Cape Martyr to Cape Hotham, and there are several on Cape Hotham itself.

6. WELLINGTON CHANNEL.—Extensive Esquimaux remains, of comparatively modern date, as compared with those at Melville Island, were found on the extreme eastern shore, beyond Northumberland Sound; and an Esquimaux camp was lying on the beach near Cape Lady Franklin. On the Western shore of Wellington Channel, ten miles north of Barlow Inlet, the remains of three huts were found.

7. GRIFFITH ISLAND.—I found the sites of four summer tents on the western beach, with bones of birds in and around them, also part of the runner of a sledge, a willow switch 2 feet 3 inches long, and a piece of the bone of a whale, a foot long, marked with cuts from some sharp instrument. Farther on, there were ruins of two huts, and some fox-traps †

8. PRINCE OF WALES ISLAND.—On the shores of the channel, between Russell and Prince of Wales Islands, there are ruins of huts, with many bones, and on the shore of a deep inlet farther west there was an old Esquimaux *cache*, containing bones of seals and bears.‡

9. NORTH SOMERSET.—Ruined huts were found at Leopold Sound, and still farther south by Allen Young, who also saw semi-circular walls of very ancient date, used for watching reindeer. There are now no inhabitants on North Somerset.

10. NORTH DEVON.—Remains of Esquimaux huts were found on Cape Spenser, Cape Riley, and in Radstock Bay. On a peninsula at the entrance of Dundas Harbour, I found several huts with moss-covered walls three feet high, a small recess on one side, and a space for the entrance on the other. I also examined twelve tombs built of limestone slabs, containing skeletons.§ I am aware that Esquimaux belonging to the Pond's Bay tribe were afterwards met with at this place by Captain Inglefield. They had come upon the dépôt which was landed at Navy Board Inlet, on the opposite coast, by Mr. Saunders, and had thence crossed over to Dundas Harbour, and finding good hunting and fishing there, they

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\* Osborn's 'Stray Leaves,' p. 143.

† 'Blue Book,' p. 266. (Additional papers, 1852.)

‡ Allen Young found remains of stones for keeping down summer huts all round the southern side of Prince of Wales Island.

§ Markham's 'Franklin's Footsteps,' p. 61.

had continued to visit it in the summer. But I still think that the stone huts and tombs are the remains of a more ancient race. The Pond's Bay Esquimaux, like those of Boothia and Igloolik, farther south, pass the winter in snow huts, and not in *yourts* of stone and earth.\*

We have thus been enabled to trace the route taken by these ancient wanderers in search of the means of sustaining life, step by step, along the whole length of the Parry group, from Baring Island to Cape Warrender. This region does not afford the necessary conditions for a permanent abode of human beings. Constant open water during the winter,—at all events in pools and lanes, appears to be an absolute essential for the continued existence of man in any part of the Arctic regions, when without bows and arrows, or other means of catching large game on land. This essential is not to be found in the frozen sea, whose icy waves are piled up in mighty heaps on the shores of the Parry Islands. Reindeer, musk oxen, and hares are in abundance on Melville and Baring Islands throughout the winter, but the emigrants, whose course we are endeavouring to trace, were no more able to catch them than are the modern "Arctic Highlanders." There animal food, too, without blubber of seal or walrus for fuel with which to melt water for drinking purposes, would be insufficient to maintain human life in the Arctic zone. As they advanced farther east they would come to the barren limestone shores of Bathurst and Cornwallis Islands, where the club moss ceases to grow, where all vegetation is still more scarce, and where animal life is not so abundant. A few years of desperate struggling for existence must have shown them that their journey half round the world was not yet ended. Again they had to wander in search of some less inhospitable shore, leaving behind them the ruined huts and fox-traps which have marked their route, and helped to identify them with the fugitives who left their *yourts* at the mouths of the Indigirka and the Kolyma. We have every reason to believe that no Esquimaux have since visited the Parry Islands.

The emigrants probably kept marching steadily to the eastward along and north of Barrow's Straits. They doubtless arrived in small parties throughout the fourteenth, fifteenth, and sixteenth centuries. They seem to have been without canoes, but to have been provided with dogs and sledges, and on reaching the mouth of Lancaster Sound they appear to have kept along the shore, leaving traces in the shape of ruined huts at the entrance of Jones's Sound, and finally to have arrived in Greenland, on some part of the eastern shore of Smith Sound, not improbably at the "wind-loved" point of Anokatok. Thence, as new relays of emi-

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\* Parry's second voyage. Ross's second voyage.

grants arrived, they may be supposed to have separated in parties to the north and south, the former wandering whither we know not, the latter crossing Melville Bay, appearing suddenly among the Norman settlements, and eventually peopling the islets and fiords of South Greenland. Some of the wanderers remained at the "wind-loved" point, established their hunting grounds between the Humboldt and Melville Bay glaciers, and became the ancestors of that very curious and interesting race of men, the "Arctic Highlanders."

Unlike the Parry Islands, the coast of Greenland was found to be suited for the home of the hardy Asiatic wanderers, and here at length they found a resting-place. Its granite cliffs are more covered with vegetation than are the bare limestone ridges to the westward. The currents and drifting bergs keep pools and lanes of water open throughout the winter, to which walrus, seals, and bears resort. Without bows and arrows, without canoes, and without wood, the "Arctic Highlanders" could still secure abundance of food with their bone spears and darts. For generations they have been completely isolated by the Humboldt glacier to the north, and the glacier near Cape Melville to the south. Thus their range extends along 600 miles of coast line, while inland they are hemmed in by the *Sermik-soak*, or great ice-wall. Dr. Kane tells us that they number about 140 souls,\* powerful, well-built fellows, thick-set, and muscular, with round chubby faces,† and the true warm hearts of genuine hunters; ready to close with a bear twice their size, and to enter into a conflict with a fierce walrus of four hours' duration on weak ice. I do not see any valid grounds for Dr. Kane's supposition that they are fast dying out. Their *igloo*, or winter habitation, is a circular stone hut, about 8 feet long by 7 broad, and is identical in all respects with the ruins which we found on the shores of the Parry islands. It should be observed also that by comparing the vocabulary of the language of the Greenland Esquimaux with that of the Tchuktches of northern Siberia, it will be seen that both dialects are of the same mother tongue. It is not, however, my intention to enter upon a discussion of the habits of these singular people, or to describe their dress, their weapons, or their habitations; these points, interesting as they are, would form abundant material for another paper, and would more fitly be considered at a meeting of the Ethnological Society.

I desire on this occasion to confine myself to the *migrations* of the Greenland Esquimaux, and, in conclusion, to point out the interesting field for ethnological research which probably lies before a Polar expedition in regions of which we now know nothing. The discoveries of geologists have recently brought to light the

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\* 'Kane,' ii. p. 108.

† Ibid., p. 250.

existence of a race of people who lived soon after the remote glacial epoch of Europe, and who were unacquainted with the use of metals. Their history is that of the earliest family of man of which we yet have any trace; while here, in the far north, there are tribes still living under exactly similar conditions, in a glacial country, and in a stone age. A close and careful study of this race, therefore, and more especially of any part of it which may be discovered in hitherto unexplored regions, assumes great importance, and becomes a subject of universal interest.

I ventured to hint just now that, after the arrival of the Asiatic emigrants at the "wind-loved" point, while some went south and, driving out the Norsemen, peopled Greenland; and while others remained between the forks of the great glacier, a third party may have wandered north to still more remote and now unknown shores, where the required conditions for their existence may be attainable. I believe this to be far from improbable. It is true that the "Arctic Highlanders" told Dr. Kane that they knew of no inhabitant beyond the Humboldt glacier, and this is the farthest point which was indicated by Kalahierua—*Erasmus York* (the native lad who was on board the *Assistance* for more than a year), on his wonderfully accurate charts. In like manner the Esquimaux of Upernavik knew nothing of natives north of Melville Bay until the first voyage of Sir John Ross. Yet we know that there either are or have been inhabitants north of Humboldt glacier, for Morton (Dr. Kane's steward) found the runner of a sledge, made of bone, lying on the beach on the northern side of it.\* There is a tradition, too, among the Arctic Highlanders that there are herds of musk oxen far to the north on an island in an iceless sea.† Assuredly if Morton gave an accurate account of what he saw beyond the 80° of N. latitude, the Esquimaux who wandered towards the Pole would have no inducement to return south again. Open water means to them life. It means bears, seals, walrus, ducks, and roaches. It means health, comfort, and abundance.

In the belief of some geographers there is a great *Polynia*, or basin of open water round the Pole.‡ Wrangell says that open water is met with north of New Siberia and Kotelnoi, and thence to the same distance off the coast between Cape Chelagskoi and Cape North.§ If this be the case the Omoki and Onkilon, who fled before Tartar or Russian invasion, had no reason to regret their change of residence. A land washed by the waves of a *Polynia* would be a good exchange for the dreary *tundra* of Arctic Siberia, where the earth is frozen for 70 feet below the surface. Dr. Petermann, and other geographers, believe that open water at all seasons, probably forming a large navigable Arctic ocean, extends along the

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\* Kane, i. p. 309.

† Hayes, p. 35.

‡ Petermann's 'Search for Franklin.'

§ Wrangell, p. 504.

northern coasts of Siberia, and of the Parry group. Now if these theories be anything like the truth, I think that scattered tribes will also be found far to the north. Wherever a *Polynia*, be it large or small, really exists, there men who sustain life by hunting seals and walrus may be expected to be found upon its shores. We may reasonably conclude then, if the region between Morton's farthest and the Pole bears any resemblance to the coast of Greenland, if there is a continent or a chain of islands with patches of open water near the shores, caused by ocean currents, that tribes will be found resembling the "Arctic Highlanders," who extend their wanderings to the very Pole itself. Such a people will be completely isolated, they will be living entirely on their own resources—far more so even than the "Arctic Highlanders," since the North water has been for the last forty years visited by whalers and explorers; and a full account of the habits, the mode of life, and the language of so isolated a people will be to many of us among the most valuable results of the contemplated Polar expedition.

I have thus endeavoured to point out the route which was probably taken by the ancestors of the Greenlanders, and of the supposed denizens of the Pole, in their long march from the Siberian coast. I am not in the least wedded to the theory which is propounded in this paper, but I have solicited your attention in order to point out, by a few suggestive hints, what a wide field of interesting and valuable research is waiting for investigation in the science of ethnology alone in the region of the Pole; and, be it remembered that this is but one out of many branches of knowledge which will be enriched by future North Polar explorers.

VIII.—*On Stereoscopic Maps, taken from Models of Mountainous Countries.* By FRANCIS GALTON, Esq., F.R.S.; illustrated by Specimens photographed by ROBERT CAMERON GALTON, Esq.

*Read, March 13, 1865.*

A LARGE amount of theory and practical skill has been directed to the art of mapping mountainous countries, on an accurate and pictorial system; but the results are far from satisfying the every-day requirements of mountaineers and other travellers. The idea obtained from the best of these maps is considerably inferior to the knowledge gained by seeing a model.

There are serious obstacles to the complete success of the map-maker in representing mountainous countries. Simple shading is too feeble an instrument to express gradations of relief, and the insertion of names interferes with the regularity of the shading. Contour maps are complete failures whenever crags and cliffs